ADDITIONAL FEE

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R E M A R K S

The Office Action issued November 22, 2010 has been received and its contents have been carefully considered.

The claim rejections under 35 USC §112 are well taken. Claims 1, 3, 7 and 25 have accordingly been amended to overcome the various formal objections and claim 27, which is directed to applicants' method of sorting different materials, has been canceled.

Claim 1 has been amended, in addition, to define the relationship of the deflector structure in relation to the coil and shaft, as kindly recommended by the Examiner on page 7, lines 13-15 of the Office Action. In particular, the ejector 15, shown in Figs. 1 and 3 for example, has now been recited as part of the electromagnetic actuator "to eject pieces of material when the energizeable coil effects an actuating operation."

Claim 3 has been amended to refer to this ejector.

All of the claims of this application, as previously presented, have been rejected as being unpatentable over the

U.S. Patent No. 2,541,937 to Powers in view of the U.S. Patent No. 5,621,591 to Rahimi et al. and "design choice" as well as in view of the U.S. Patent No. 6,119,667 to Boyer et al. and U.S. Patent No. 4,561,545 to Carlow, and "what is well known in the art." These rejections are respectfully traversed because the "gate operating motor" of Powers is completely different, and not analogous to applicants' electromagnetic actuator, and it would not be obvious to a person skilled in the art to combine the teachings of Rahimi et al., which relates to a voice coil motor (VCM) for a disk drive, and utilize this type of drive in a device for sorting out pieces of physical material on a conveyor belt which are transported on the belt. The patent to Boyer et al. relates to a spark plug for an internal combustion engine (!) whereas Carlow merely discloses general "ramp actuators RSA" (Fig. 2) which "can be hydraulic, or electromagnetic or other suitable type." (Col. 9, lines 64-68).

The present invention concerns a device for sorting materials which are transported on a conveyor belt and sensed, in a location-dependent manner, by one or more sensors to sort out individual pieces of material. The device comprises at least one "electromagnetic actuator"

with a particular structure as defined in claim 1. In one embodiment, shown in Fig. 4, the actuator comprises a single energizeable coil 10 and two pairs of permanent magnets 8 and 9. In another embodiment, shown in Fig. 5, the actuator comprises two energizeable coils 10 and 40, and three permanent magnets 8, 9 and 22. The actuator of Fig. 4 is a two position actuator whereas the actuator of Fig. 5 operates to move an ejector 15 between three positions, as shown in Fig. 6.

As explained in the specification of this application, paragraph [0011]:

> "The sorting device is distinguished by the electromagnetic actuator which on one hand is of a simple construction and with which on the other hand comparatively great actuating forces can be accomplished. Moreover, such an electromagnetic actuator offers the possibility of achieving a small construction, the widths of the actuator being substantially determined by the thickness of permanent magnets and the thickness of the coil in addition to an exterior housing. With such a small construction, it is possible to assemble a plurality of actuators into a modular unit in a compact way so that a field of actuators can be accomplished. In such a modular unit it is then possible to exchange individual actuators if an incorrectly operated operating unit must be repaired."

The operation of this electromagnetic actuator is fully explained in the specification, in paragraph [0042] for the

embodiment of Fig. 4, and in paragraph [0044], last twenty lines, for the embodiment of Fig. 5.

It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied on for a basis for rejection of a claimed invention. In re Oetiker, 977 F.2d 1443 (Fed. Cir. 1992). Two of the references cited by the Examiner, namely, Rahimi et al. and Boyer et al., have nothing at all to do with applicants' field of endeavor (sorting materials transported on a conveyer belt). The other two references, namely, Powers and Carlow, provide absolutely no teaching of either the objective of the present invention (providing a robust electromagnetic actuator for sorting pieces of material which is of simple construction, produces great actuating forces, is relatively thin in construction and can be made into a modular unit for easy replacement) or the means to achieve this objective.

In fact, Powers and Carlow both teach away from the present invention. Powers provides a round electric motor which is neither thin nor simple in construction. Carlow shows hydraulic actuators RSA in Fig. 2 and, although mention is made in the specification of "electromagnetic

actuators" of some undefined type, clearly the implication is that hydraulic actuators are preferred.

Accordingly, applicants respectfully point out that a combination of Powers and/or Carlow with the teaching of Rahimi et al. and Boyer et al. is inappropriate in this case. It would not occur to a person skilled in the art to consider the "voice coil motor" art or the spark plug art when attempting to improve an electromagnetic actuator for a material sorting device.

Accordingly, claim 1 as presently amended, is believed to distinguish patentably over these references.

Since all the remaining claims of this application depend from claim 1 and recite further novel features in addition thereto, and since all of the formal issue raised by the Examiner have been resolved by this Amendment, this application is believed to be in condition for immediate allowance. A formal Notice of Allowance is accordingly respectfully solicited.

Respectfully submitted,

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